Amendments to the Drawings

In FIG. 3, reference number 336 (PSDP PREP) is changed to 330.

In FIG. 3, reference number 330 is changed to 332.

In FIG. 5, reference number 54 is changed to 504.

Attachment: Replacement Sheet(s)

Annotated Marked-Up Drawings for Figs. 3 and 5

REMARKS

Claims 1-14 remain in the application. No claim has been allowed.

The drawings were objected to as various reference characters were either duplicative or included in the drawings that were not mentioned in the description. With entry of the foregoing amendment to the specification and drawings:

reference characters 301, 302, 304, 306, 308, 310, 312, 314, 322, 324, 330, 334, 336 and 338 are now noted in the appropriate places in the specification;

the PSDP PREP in FIG. 3 is now labeled 330;

the JPU DIAGS in FIG. 3 is now labeled 332; and

the header storage in FIG. 5 is now labeled 504.

A marked up copy of the original drawings and formal replacement drawings for Figs. 3 and 5 are now enclosed.

Additional paragraphs describing reference characters 301, 302, 304, 306, 308, 310, 312, 314, 322, 324, 330, 334, 336 and 338 are now explicitly added to the specification at page 17, line 17. The text is taken from U.S. Patent Application entitled "Asymmetric Streaming Record Data Processor Method and Apparatus," (Attorney Docket No. 3336.1016-001) at page 30, line 2 to page 34, line 3, the entire teachings of which were incorporated by reference at page 1 lines 10-12 of this application as originally filed. No new material has been added.

Claims 1, 9 and 11 were objected to because of informalities. Those informalities are corrected and reconsideration is requested.

Claim 1 has been amended to provide a sufficient antecedent basis for "a JPU" in line 15. It has also been amended to correct an obvious typographical error in the word "Programmable" and to use the previously-defined acronyms "FIFO" and "JPU."

Claim 9 has been amended to provide a sufficient antecedent basis for "an overflow filter" in line 1.

Claim 11 has been amended to end in a period.

Claims 1-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Baker, *et al.* (U.S. Patent 6,434,649) in view of Zwiegincew, *et al.* (U.S. Patent Application Publication 2005/0154705). It is believed that the Examiner failed to set forth a prima facie case of obviousness. Reconsideration is requested.

Claim 1 is directed to a Programmable Streaming Data Processor (PSDP) which is arranged to perform primitive functions directly on data received from a streaming data interface. The PSDP processes data from a streaming data source, such as a disk drive, prior to its being forwarded to a central processing unit (CPU) of a more general processor. The PSDP performs certain preliminary processing in order to reduce the computational load on the local CPU. The data engine determines field boundaries in the data received from the streaming interface FIFO, selects one or more fields to be output tuples, and contains logic to determine whether an output tuple is to be selected for further processing by additional Job Processing Units. The invention relates to distributed data processing systems that use multiple processing unit groups.

Baker, *et al.* relates to a data processor, and more specifically to a data transfer arrangement mechanism employed to transfer data to various components within a data processor. Such a multimedia processor and data transfer arrangement are directed to processing computer graphics and graphics on a standalone gaming console.

With regard to the Examiner's rejection of Claim 1, however, there is no suggestion in Baker, *et al.* at column 5, lines 59-68 and FIG. 1, items 122 and 132 of a streaming data interface, for receiving data from a streaming data source. In particular, the data streamer as claimed in Baker, *et al.* provides buffered data movements within the multimedia processor and

is not a streaming data interface for receiving data from a streaming data source as in the claimed invention.

There is no suggestion in Baker, *et al.* at column 17, lines 25-45; column 18, lines 13-22; and FIG. 7, item 716 of a streaming interface First In First Out (FIFO), arranged for temporarily storing streaming data from the streaming data interface. The first-in-first-out buffer in Baker, *et al.* buffers data between the data transfer switch interface and the transfer engine, and is described as internal to the data streamer. In the claimed invention, the FIFO temporarily stores streaming data from the streaming data interface and can be located external of the streaming data interface.

There is no suggestion in Baker, *et al.* at column 20, lines 21-23 and FIG. 1a, item 112 or elsewhere of a data engine, arranged to receive output data from the streaming interface FIFO.

Also, Baker, *et al.* does not determine field boundaries in data from the streaming interface FIFO, does not process fields to select one or more fields to be output tuples, and does not contain logic to determine whether an output tuple is to be selected for further processing by additional processing Job Processing Units. The data transfer switch is simply a routing mechanism for switching connections. All of the components of the multimedia processor in Baker, *et al.* are coupled to the data transfer switch: data cache, instruction cache, fixed function cache, memory controller, data streamer, PCI/AGP interface, and programmable input/output controller.

More specifically, the claimed data engine, as a portion of the PSDP, provides programmable hardware directly in the disk read path from the controller and is programmed to understand the structure of the data that analysis software wishes to read and analyze. The PSDP can be programmed to operate on data as it is received from the disk, before it is stored in the JPU's memory, and in that process discard data that the CPU would otherwise have to analyze and discard in the absence of the data engine. In an embodiment specifically adapted for processing of field-oriented data from a database, data can be parsed by the PSDP into block

header, record hearer, and record data fields of a database, and the record fields can be filtered by the PSDP so that only certain fields from certain records are actually forwarded to be written into the associated JPU's memory.

Thus, not only does the Applicant's invention require "determining field boundaries," but also requires "selecting fields as output tuples." Baker, *et al.* does not even parse database records, never mind determine field boundaries or select fields to build output tuples. Baker, *et al.* might be "routing" data, but this is about all.

There is also no suggestion in Baker, *et al.* at column 30, lines 11-21 of a tuple generator for assembling fields into the output tuple, and if the use/lose decision value indicates that such output tuple is to be discarded, from preventing such tuple set from being transferred from the output FIFO to the memory of the JPU. Further, by the Examiner's own admission, Baker, *et al.* fails to explicitly teach this further limitation.

There is no suggestion in Baker, et al. at column 30, lines 22 -32 of an output FIFO device, for forming tuples and temporarily storing them prior to conditionally forwarding them to the JPU.

With respect to Claim 2, Baker, *et al.* at column 17, line 52 - column 18, line 12 fails to disclose use/lose values indicating a result from logic processing of fields read from the streaming data interface. Baker, *et al.* does not assign a use/lose value to data to determine whether the data engine should select it for an output tuple.

With respect to Claim 3, Baker, *et al.* at column 29, lines 63-65 fails to disclose a Transaction Identifier.

With respect to Claim 4, Baker, *et al.* at column 5, lines 11-15 fails to disclose TID processing and data engine logic being executed in parallel. Baker, *et al.* makes no reference to TID processing or data engine logic.

With respect to Claim 5, the Examiner fails to cite any specific reference in Baker, *et al.*

With respect to Claim 6, Baker, *et al.* at column 18, lines 56-64 fails to disclose not asserting the use/lose decision value when a buffer local to the programmable data streaming processor is full; and means for appending an overflow filter bit to a tuple that indicates a transfer of a tuple that should be ignored. The value of the valid bit used in Baker, *et al.* indicates whether the specific byte is valid or not. Baker, *et al.* does not however, not assert a use/lose decision value when a buffer local to the programmable data streaming processor is full and make no use of an overflow filter bit to a tuple that indicates a transfer of a tuple that should be ignored. Further, Baker, *et al.* makes no reference to tuples.

With respect to Claim 9, Baker, *et. al.* at column 34, lines 56-62 fails to disclose an overflow filter bit inserted in a length field appended to record fragments. Baker, *et al.* makes no reference to an overflow filter bit and does not inserts an overflow filter bit in a length field appended to record fragments.

With respect to Claim 10, Baker, *et al.* at column 12, line 62 - column 13, line 16 fails to disclose an invalid filed appended to a tuple to indicate the results of transaction ID processing. Baker, *et al.* makes no reference to fields. Baker, *et al.* makes no reference to an invalid field, makes no reference to a tuple, and makes no reference to appending an invalid field to a tuple to indicates the results of transaction ID processing.

With respect to Claims 2-14 the Examiner has failed to meet the burden of persuasion for a prima facie case of obviousness. Zwiegincew, *et al.* does not overcome any of the deficiencies of Baker, *et al.*

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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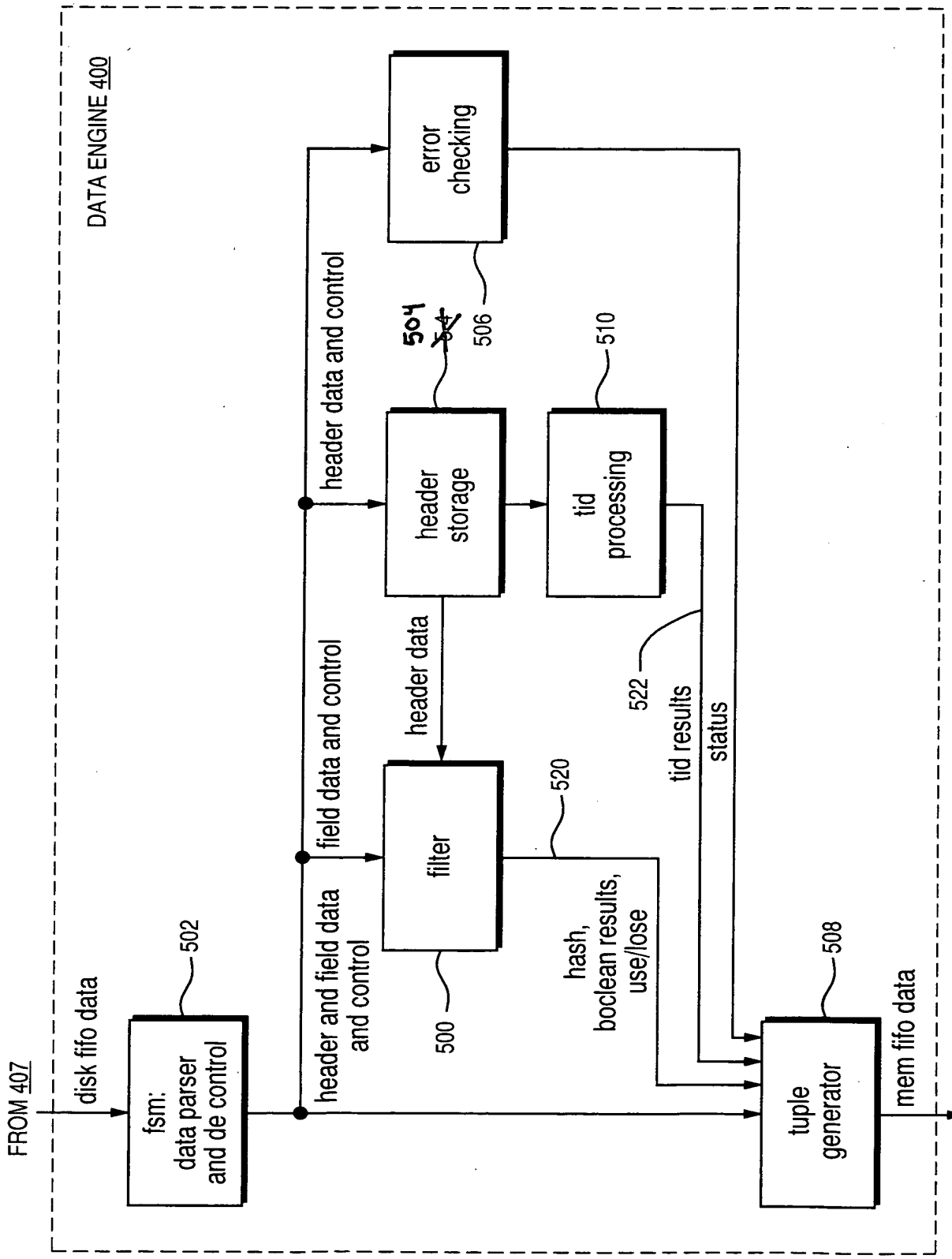
Dated: 8/4/06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disk fifo data
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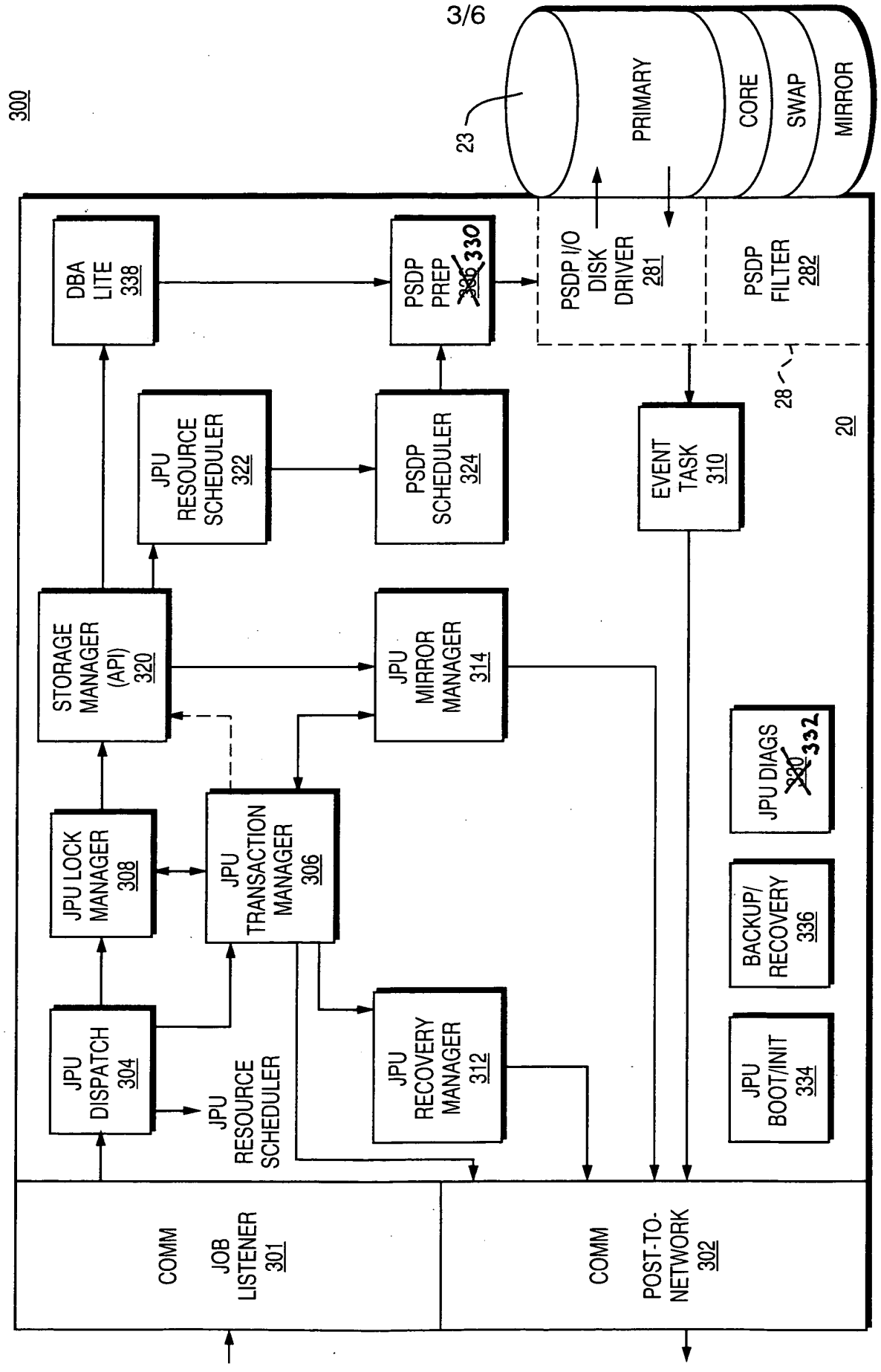
502
header and field data and control
header data and control
field data and control
error checking
506
504
header storage
header data
filter
500
520
tid processing
510
522
tid results
status
hash, boclean results, use/lose
tuple generator
508
mem fifo data
TO 406

FIG. 5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CORE
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PSDP I/O DISK DRIVER 281
PSDP FILTER 282
28
20
JPU RESOURCE SCHEDULER 322
PSDP SCHEDULER 324
EVENT TASK 310
STORAGE MANAGER (API) 320
JPU MIRROR MANAGER 314
JPU DIAGS 332
JPU LOCK MANAGER 308
JPU TRANSACTION MANAGER 306
BACKUP/ RECOVERY 336
JPU DISPATCH 304
JPU RESOURCE SCHEDULER
JPU RECOVERY MANAGER 312
JPU BOOT/INIT 334
COMM
JOB LISTENER 301
COMM
POST-TO-NETWORK 302

FIG. 3